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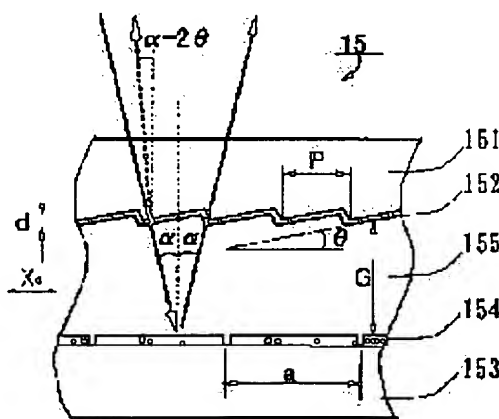
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(54) MANUFACTURE OF LIQUID CRYSTAL SUBSTRATE, LIQUID CRYSTAL DISPLAY ELEMENT AND PROJECTION TYPE LIQUID CRYSTAL DISPLAY DEVICE

(57) Abstract:

PROBLEM TO BE SOLVED: To remove the unnecessary light of a projection display.

SOLUTION: The transparent electrode 152 having the saw-toothed teeth-like surface of the pitch P and height (d) is formed in a surface electrode substrate 151, the reflecting function layer 154 of the picture element length (a) is formed in the back electrode substrate 153, the liquid crystal/resin complex 155 of the average thickness G is sandwiched between both substrates ($a > P$, $a > G$), and the converging angle (δ) of a projection optical system (the number of effective aperture $F = \sin^{-1} \delta$) satisfies $\theta_{AV} \geq \delta/2$ when the average value in the effective dimensional length of the angle $\theta(x)$ between the saw-toothed surface and a flat surface is meant by θ_{AV} .



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